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EFFECTS OF ERECTOR SPINAE PLANE BLOCK ON SYMPATHECTOMY IN OFF PUMP CORONARY
ARTERY BYPASS SURGERY

Introduction

Off-pump coronary artery bypass grafting (OPCABG) is a bypass technique used on the working heart. For the anastomoses on OPCABG, usually the left internal mammarian artery (LIMA), right internal mammarian artery (RIMA) and left and right radial arteries are chosen.

Erector spina plane block is a newly defined, relatively safer fascial plane block that has similar analgesic affects as the paravertabral or epidural blocks. Studies show that ESP block causes sympathetectomy. This study aims to examine the effects of sympathetectomy caused by the ESP block on the LIMA, RIMA, right and left radial artery's radius and area pre and post ESP block.

Methods

The study is planned as prospective. Patients who are aged between 18-65, ASA III and are undergoing off pump coronary artery bypass grafting surgery are selected for the study. Patients who are allergic to planned-medications, chronic opioid or opioid receptor agonist users, those with pre-operative neuropathies, psychiatric diseases, non-communicable patients and those who refuse to participate will be excluded. Standard echocardiography and pulse oximetry monitorization is performed in the recovery room where a peripheric intravenous line is opened afterwards. High frequency (12-24 MHz) GE Logiq S7 (General Electric Healthcare, Little Chalfont, United Kingdom) lineer probe is used for measurements. Images will be recorded by ultrasound from the 3., 4. And 5. Intercostal spaces for the LIMA and RIMA and 3cm proximal to the wrist for the right and left radial arteries. After images are saved, the researcher will perform ESP block with USG. High frequency lineer/convex probe is used to place the needle parasagittally 3 cm lateral to T5 spinous processes. Trapezius, rhomboid major, erector spina muscles and transverse processes will be identified with USG, and with in-plane technique, needle will be advanced cranio-caudally 5 cm under USG. ESP block will be performed to right and left sides equally with 40ml %0.25 bupivacain in total, to the fascial plane between the transverse process and erector spina muscle. Vital parameters and treatment time will be recorded. Artery images will be recorded again by the same researcher after 45 minutes.

For the recordings, one researcher will record the artery images as explained in the protocole and two researchers will measure the radius and area of those vessels seperately. Researchers who are measuring the radius and area of vessels won't know whether those images belong to pre or post- ESP block. The results two researchers measure will be compared statistically and if there are no statistically significant differences, the mean value of their seperate recordings will be taken into account for the statistical analysis.

Statistical Methods

As a result of the pilot study conducted with 10 patients, the percentage point difference was found to be 39.7+15.8%. The experiment findings were the following: Experiment percentage point differential is ~30%, Type I error (α) is 0.05, power ($1-\beta$) is 80% and sample size is 21. It would be prudent to add 25 more patients to the study, if we assume a 20% data loss ratio. The sample account was calculated by ClinCalc online. Statistical analysis will be performed using the IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp. The normality of continuous variables will be investigated by Shapiro-Wilk's test. Descriptive statistics will be presented using mean and standard deviation for normally distributed variables and median (and minimum-maximum) for the non-normally distributed variables. Non-parametric statistical methods will be used for values with skewed distribution. For comparison of two non-normally distributed dependent groups Wilcoxon Signed Rank test will be used. For comparison of two non-normally distributed independent groups Paired sample t test will be used. Statistical significance was accepted when two-sided p value was lower than 0.05.